

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

**“Photocatalysis for Air Pollution Control and Energy-Related Applications”**



**Presented By**

**Jean M. Andino, Ph.D., P.E.**

***Chemical Engineering***

***Civil, Environmental, and Sustainable Engineering***

***Arizona State University***

**Abstract**: Prof. Andino will provide an overview of her group’s research in the reaction engineering/air quality fields, focusing on recent work in the theme area of carbon dioxide (CO2) control. The development of novel technologies to minimize the direct emissions of CO2 to the environment is an important research theme given the influence of CO2 on global climate change, as well as a recent policy change by the US Environmental Protection Agency that regulates carbon emissions from stationary sources. CO2 capture and storage techniques have been under development for a significant period of time. However, the value of these techniques would be extended through the implementation of technologies that reuse the CO2. The light-initiated conversion of CO2 over a catalyst represents a sustainable approach to reducing the direct emissions of CO2 while simultaneously creating value through the generation of chemicals that may be used for energy or as raw materials for manufacturing. Work has been conducted to (1) devise novel photocatalysts that can aid in the conversion of CO2 to useful materials, (2) understand the chemical mechanisms associated with the conversion of CO2, and (3) enhance the reaction through novel chemical reactor design. This presentation will focus on the Andino group’s recent work in the area of CO2 control, as well as the broader environmental applications of this technology to stationary sources such as power plants.

**Biography:** Prof. Andino’s research group focuses on chemical kinetics and mechanisms as applied to air quality (atmospheric chemistry and air pollution control) and energy-related themes. Recent major research themes include the development of novel photocatalysts and photocatalytic systems for the chemical conversion and recycling of carbon dioxide to useful materials, as well as understanding the atmospheric degradation pathways for compounds that are of interest to the Department of Defense.

Prof. Andino is a graduate of Harvard (Bachelor of Science in Engineering Sciences) and the California Institute of Technology (PhD in Chemical Engineering). Between her undergraduate and graduate school years, she worked for two years as part of the Chemical Engineering and Chemistry departments of the Research Staff at Ford Motor Company. As a faculty member, Prof. Andino has obtained more than $12M in external funding to support research and students. She earned a National Science Foundation CAREER award at the very start of her career on the Environmental Engineering Sciences faculty at the University of Florida, and, in 2012, while on sabbatical from her current position on the faculty at Arizona State University, earned a prestigious Fulbright US Scholar award in Renewable Energy for teaching and research at the Universidad Tecnológica de Panamá in the Republic of Panamá. She is one of only a few engineering faculty in the US to earn a Fulbright. Prof. Andino engages in significant service activities, currently serving on multiple National Academies panels and the Fulbright Western Hemisphere selection committee. She is also a registered professional engineer (PE) who works with the National Council of Examiners in Engineering and Surveying to develop the Fundamentals of Engineering exam, the first step towards engineering licensure.

**Thursday, April 14, 2016 3:30 PM**

Rich Lab Auditorium

***Refreshments following Seminar***